Organometallics 2006 vol.25 N21, pages 5031-5034

Generating phosphinidene - N-methylimidazole adducts under mild conditions

Kalinina I., Mathey F.
Kazan Federal University, 420008, Kremlevskaya 18, Kazan, Russia

Abstract

The nucleophilic attack of N-methylimidazole at the bridge phosphorus of a 7-phosphanorbornadiene pentacarbonylmolybdenum complex induces the collapse of the bridge. According to DFT calculations, the resulting zwitterion displays a very long and weak P - Mo bond. The excess of, N-methylimidazole thus appears to be able to displace the phosphinidene from its molybdenum complex. The final result is a phosphinidene- N-methylimidazole adduct whose structure has also been computed. When applied to the phenyl derivative at 40°C in toluene, this reaction effectively generates the [PhP] adduct, which decomposes to give essentially Ph 4P 4 and Ph 5P 5. At 80°C, PhPH 2 is also produced. In the presence of CCl 4 the phosphinidene adduct inserts into the C-Cl bond to give PhP(Cl)CCl 3. © 2006 American Chemical Society.

http://dx.doi.org/10.1021/om060460m